

1 CLAIMS

We claim:

1.

A powered soil tillage device, comprising:

5 an elongated, hollow support member having upper and lower ends;

a handle on said support member at the upper end thereof;

a power means on said support member at the upper end thereof;

a power shaft extending from said power means downwardly through said hollow
10 support member;

a gearbox on said support member at the lower end thereof and having first and second
sides; said gearbox being operatively connected to and driven by said power
shaft;

said gearbox including a driven, transversely extending first shaft rotatable about a
15 generally horizontal axis, with first and second ends positioned outwardly of said
first and second sides of said gearbox;

a first elongated crank arm having first and second ends;

a second elongated crank arm having first and second ends;

20 said first end of said first crank arm being secured to said first end of said first shaft in a
transversely disposed relationship thereto for rotation with said first shaft;

said first end of said second crank arm being secured to said second end of said first
shaft in a transversely disposed relationship thereto for rotation with said first
25 shaft;

1 said first and second crank arms being offset with respect to one another approximately
180 degrees;

2 a support secured to said hollow support member between said gearbox and said upper
end of said hollow support member and having first and second sides;

3 a first elongated rocker arm having first and second ends;

4 a second elongated rocker arm having first and second ends;

5 said first end of said first rocker arm being rotatably secured to said support at said one
side thereof;

6 said first end of said second rocker arm being rotatably secured to said support at said
second side thereof;

7 a first elongated beam having first and second ends;

8 a second elongated beam having first and second ends;

9 said first end of said first beam being rotatably secured to said second end of said first
rocker arm;

10 said first end of said second beam being rotatably secured to said second end of said
second rocker arm;

11 said first beam being rotatably secured, intermediate its length, to said second end of
said first crank arm;

12 said second beam being rotatably secured, intermediate its length, to said second end
of said second crank arm;

13 said second ends of said first and second beams being positioned beyond said lower
end of said hollow support member;

1 a first hoe blade secured to said second end of said first beam; and
a second hoe blade secured to said second end of said second beam.

2.

5 The soil tillage device of claim 1 wherein each of said hoe blades are disposed
transversely with respect to the longitudinal axes of said beams.

3.

10 The soil tillage device of claim 1 wherein said first hoe blade is positioned
inwardly of said second end of said first beam and wherein said second hoe blade is
positioned inwardly of said second end of said second beam.

4.

The soil tillage device of claim 1 wherein said first and second hoe blades are
positioned in a fore and aft relationship with respect to one another.

5.

15 The soil tillage device of claim 1 wherein said power means comprises an electric
motor.

6.

20 The soil tillage device of claim 5 wherein said electric motor is battery-driven.

7.

The soil tillage device of claim 1 wherein said power means comprises an
internal combustion engine.

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8.

The soil tillage device of claim 1 wherein said gearbox comprises an L-shaped housing including: (a) a first housing portion which has upper and lower ends and which is generally aligned with and secured to the lower end of said elongated support member, and (b) a second housing portion extending upwardly from said lower end of said first housing portion; said gearbox having a first gear secured to the lower end of said power shaft for rotation therewith, and a second gear in mesh with said first gear; said second gear being mounted on said first shaft for rotation therewith.

9.

The soil tillage device of claim 8 wherein said first gear comprises a worm gear and wherein said second gear comprises a spur gear.

10.

A powered soil tillage device, comprising:

an elongated support member having upper and lower ends;

a handle on said support member;

a power means on said support and including a power shaft;

a gearbox on said support member at the lower end thereof and having first and second

sides; said gearbox being operatively connected to and driven by said power shaft;

said gearbox including a driven, transversely extending first shaft rotatable about a generally horizontal axis, with first and second ends positioned outwardly of said first and second sides of said gearbox;

1 a first elongated crank arm having first and second ends;

2 a second elongated crank arm having first and second ends;

3 said first end of said first crank arm being secured to said first end of said first shaft in a

4 transversely disposed relationship thereto for rotation with said first shaft;

5 said first end of said second crank being secured to said second end of said first shaft in

6 a transversely disposed relationship thereto for rotation with said first shaft;

7 said first and second crank arms being offset with respect to one another approximately

8 180 degrees;

9 a support secured to said elongated support member between said gearbox and said

10 upper end of said elongated support member and having first and second sides;

11 a first elongated rocker arm having first and second ends;

12 a second elongated rocker arm having first and second ends;

13 said first end of said first rocker arm being rotatably secured to said support at said one

14 side thereof;

15 said first end of said second rocker arm being rotatably secured to said support at said

16 second side thereof;

17 a first elongated beam having first and second ends;

18 a second elongated beam having first and second ends;

19 said first end of said first beam being rotatably secured to said second end of said first

20 rocker arm;

21 said first end of said second beam being rotatably secured to said second end of said

22 second rocker arm;

1 said first beam being rotatably secured, intermediate its length, to said second end of
said first crank arm;
said second beam being rotatably secured, intermediate its length, to said second end
of said second crank arm;
5 said second ends of said first and second beams being positioned beyond said lower
end of said support member;
a first tillage member secured to said second end of said first beam; and
a second tillage member secured to said second end of said second beam.

10 11.

The soil tillage device of claim 10 wherein each of said first and second tillage
members comprise first and second hoe blades, respectively, and wherein said hoe
blades are disposed transversely with respect to the longitudinal axes of said beams.

15 12.

The soil tillage device of claim 10 wherein said first hoe blade is positioned
inwardly of said second end of said first beam and wherein said second hoe blade is
positioned inwardly of said second end of said second beam.

20 13.

The soil tillage device of claim 11 wherein said first and second hoe blades are
positioned in a fore and aft relationship with respect to one another.

25 14.

The soil tillage device of claim 10 wherein said power means comprises an
electric motor.

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15.

The soil tillage device of claim 14 wherein said electric motor is battery-driven.

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16.

The soil tillage device of claim 10 wherein said power means comprises an internal combustion engine.

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17.

The soil tillage device of claim 11 wherein said gearbox comprises an L-shaped housing including: (a) a first housing portion which has upper and lower ends and which is generally aligned with and secured to the lower end of said elongated support member; and (b) a second housing portion extending upwardly from said lower end of said first housing portion; said gearbox having a first gear secured to the lower end of said power shaft for rotation therewith, and a second gear in mesh with said first gear; said second gear being mounted on said first shaft for rotation therewith.

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18.

The soil tillage device of claim 17 wherein said first gear comprises a worm gear and wherein said second gear comprises a spur gear.]

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19.

A powered soil tillage device, comprising:
an elongated support member having upper and lower ends;
a handle on said support member;
a power means on said support;

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1 a drive mechanism on said support member; said drive mechanism being operatively
connected to and driven by said power means;
a first elongated beam reciprocatably mounted on said support member; having first and
second ends;
5 a second elongated beam reciprocatably mounted on said support member; having first
and second ends;
said first and second beams being laterally spaced from one another;
said first and second beams being connected to said drive mechanism;
10 said drive mechanism causing said first and second beams to be reciprocatably moved
in an offset manner with respect to one another;
said second ends of said first and second beams being positioned beyond said lower
end of said support member;
15 a first tillage member secured to said second end of said first beam; and
a second tillage member secured to said second end of said second beam.

20.

The soil tillage device of claim 19 wherein each of said first and second tillage
members comprise first and second hoe blades, respectively, and wherein said hoe
blades are disposed transversely with respect to the longitudinal axes of said beams.
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21.

The soil tillage device of claim 19 wherein said first hoe blade is positioned
inwardly of said second end of said first beam and wherein said second hoe blade is
positioned inwardly of said second end of said second beam.
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1 22.

The soil tillage device of claim 20 wherein said first and second hoe blades are positioned in a fore and aft relationship with respect to one another.

5 23.

The soil tillage device of claim 19 wherein said power means comprises an electric motor.

10 24.

The soil tillage device of claim 23 wherein said electric motor is battery-driven.

15 25.

The soil tillage device of claim 19 wherein said power means comprises an internal combustion engine.

20 26.

The soil tillage device of claim 19 wherein said drive mechanism comprises an L-shaped housing including: (a) a first housing portion which has upper and lower ends and which is generally aligned with and secured to the lower end of said elongated support member; and (b) a second housing portion extending upwardly from said lower end of said first housing portion; said gearbox having a first gear operatively secured to said power shaft for rotation therewith, and a second gear in mesh with said first gear; said second gear being mounted on said first shaft for rotation therewith.

25 27.

The soil tillage device of claim 26 wherein said first gear comprises a worm gear and wherein said second gear comprises a spur gear.

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The soil tillage device of claim 19 wherein rocker arms reciprocatably secure said first and second beams to said support member.

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The soil tillage device of claim 28 wherein offset crank arms connect said drive mechanism to said first and second beams intermediate the lengths thereof.

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